



# **WN-200USB**

**Wireless 11n USB Dongle**

## **User's Manual**





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# 1

## Introduction

### 1.1 Overview

The WN-200USB provides a wireless network interface for your Notebook or PC. Besides common wireless standard 802.11b/g, WN-200USB is also able to access 802.11n wireless network whose data transfer is up to 150Mbps.



### 1.2 How to Use This Guide

WN-200USB is a wireless 11n USB dongle. It is recommended that you read through the entire user's guide whenever possible. The user guide is divided into different chapters. You should read at least go through the first 3 chapters before attempting to install the device.

#### Recommended Reading

**Chapter 1:** This chapter explains the basic information for WN-200USB. It is a must read.

**Chapter 2:** This chapter is about hardware installation. You should read through the entire chapter.

**Chapter 3:** This chapter is about windows utility installation. You also should read through the entire chapter.

**Chapter 4:** If any trouble in using WN-200USB, you can refer to this chapter

**Chapter 5:** This chapter show technical specification of WN-200USB.

**Chapter 6:** Explanation on network technical terms from A to Z. Highly recommended for reference when you encounter an unfamiliar term.

### 1.3 Driver/Utility Upgrade and Tech Support

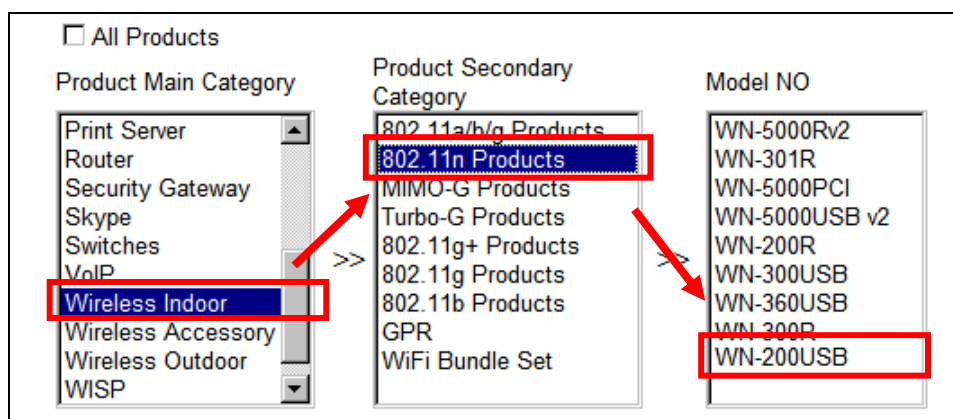
If you encounter a technical issue that can not be resolved by information on this guide, we

recommend that you visit our comprehensive website support at [www.airlive.com](http://www.airlive.com). The tech support FAQ are frequently updated with latest information.

In addition, you might find new driver/utility that either increase software functions or provide bug fixes for WN-200USB. You can reach our on-line support center at the following link:

[http://www.airlive.com/support/support\\_2.jsp](http://www.airlive.com/support/support_2.jsp)

Since 2009, AirLive has added the “Newsletter Instant Support System” on our website. AirLive Newsletter subscribers receives instant email notifications when there are new download or tech support FAQ updates for their subscribed AirLive models. To become an AirLive newsletter member, please visit: [http://www.airlive.com/member/member\\_3.jsp](http://www.airlive.com/member/member_3.jsp)



## 1.4 Features

- Compatible with Draft IEEE 802.11n, 802.11b and 802.11g 2.4GHz
- Data transmission rate is up to 150Mbps
- Supports Turbo Mode which can enhance the data transmission rate within the specific wireless network
- Supports WMM (Wi-Fi Multimedia) function (IEEE 802.11e QoS standard) and can meet the requirement of the multi-media data bandwidth
- Supports 64/128-bit WEP, WPA (TKIP with IEEE802.1x) and WPA2 (AES with IEEE 802.1x) functions for high level security
- Supports CCX v5 (Cisco Compatible Extensions) for the radio monitoring and fast roaming
- Automatic fallback which increases the data security and reliability
- Supports USB 2.0 interface

# 2

## Installing the WN-200USB

This chapter describes the software and hardware installation procedure for the WN-200USB. For utility configuration, please go to chapter 3 for more details.

### 1.1 Requirement

It is important to make sure that you have the below requirement before installing the WN-200USB.

- Your operation system of PC or Notebook is Windows 2000/XP/Vista.
- Available USB port.
- CD-ROM drive.
- IEEE802.11b, IEEE802.11g or IEEE802.11n wireless LAN.

### 2.2 Package Content

Unpack the contents of the WN-200USB and verify them against the checklist below.

- One unit of WN-200USB
- User Guide (CD-ROM)
- Quick Installation Guide



**WN-200USB**



**User Guide (CD-ROM)**



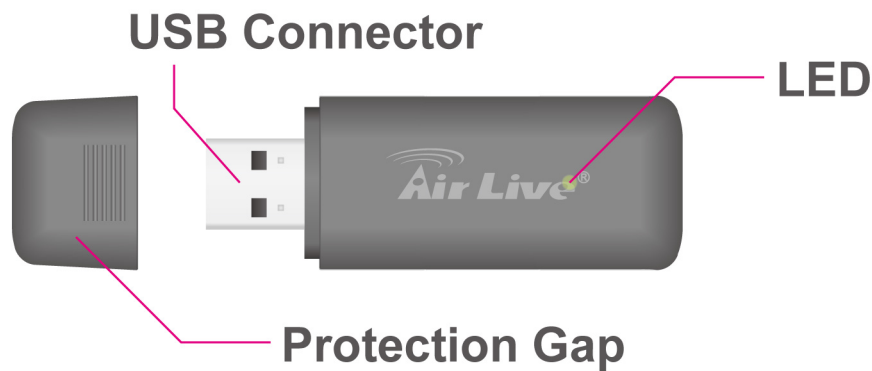
**Quick Installation Guide**

Compare the contents of your WN-200USB package with the standard checklist above. If any item is missing or damaged, please contact your local dealer for service.



## 2.3 Knowing your WN-200USB

Below are descriptions and diagrams of the product:



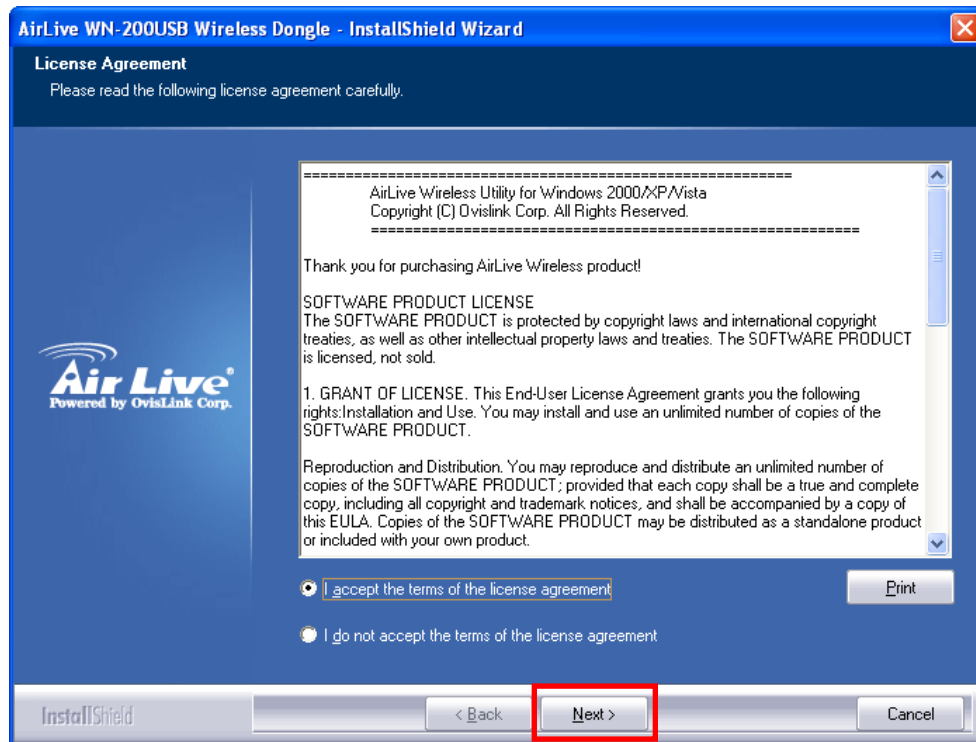
## 2.4 Software Installation

You should install the supplied software **BEFORE** inserting the WN-200USB.

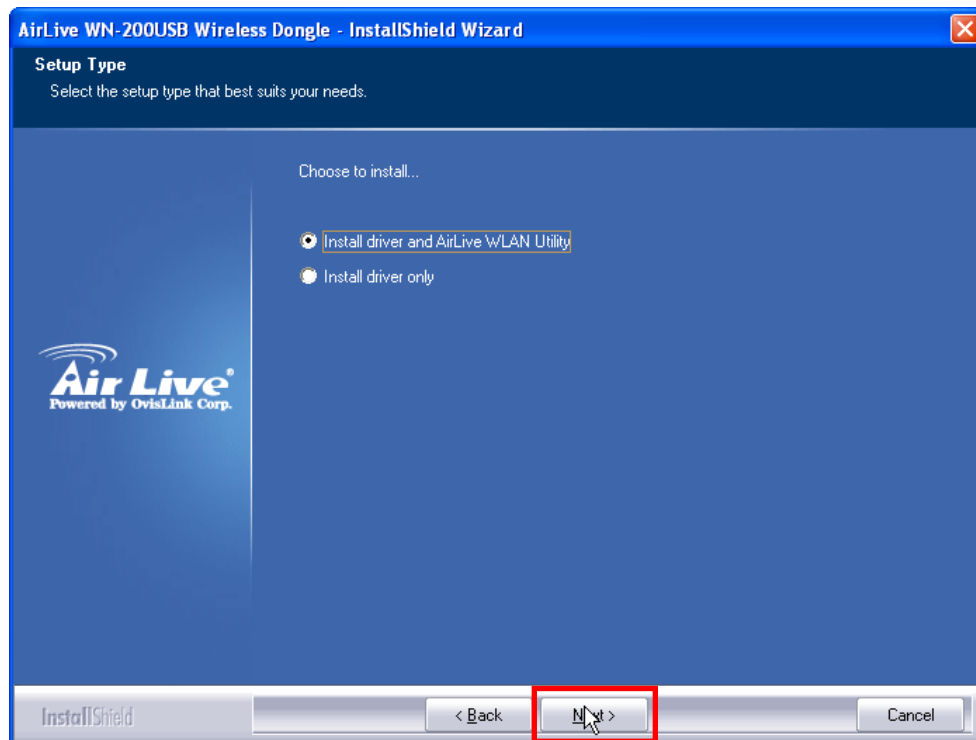
1. Insert the CD-ROM into the drive on your PC or Notebook.
2. The main screen of AutoRun CD will appear automatically. If not, please run "D:\autorun.exe" where D is the letter of your CD-ROM drive. Select **Install Driver & Utility** to start installation



3. Please read the end user license agreement and click “I accept the terms of the license agreement” then click “**Next**” button to accept license agreement.

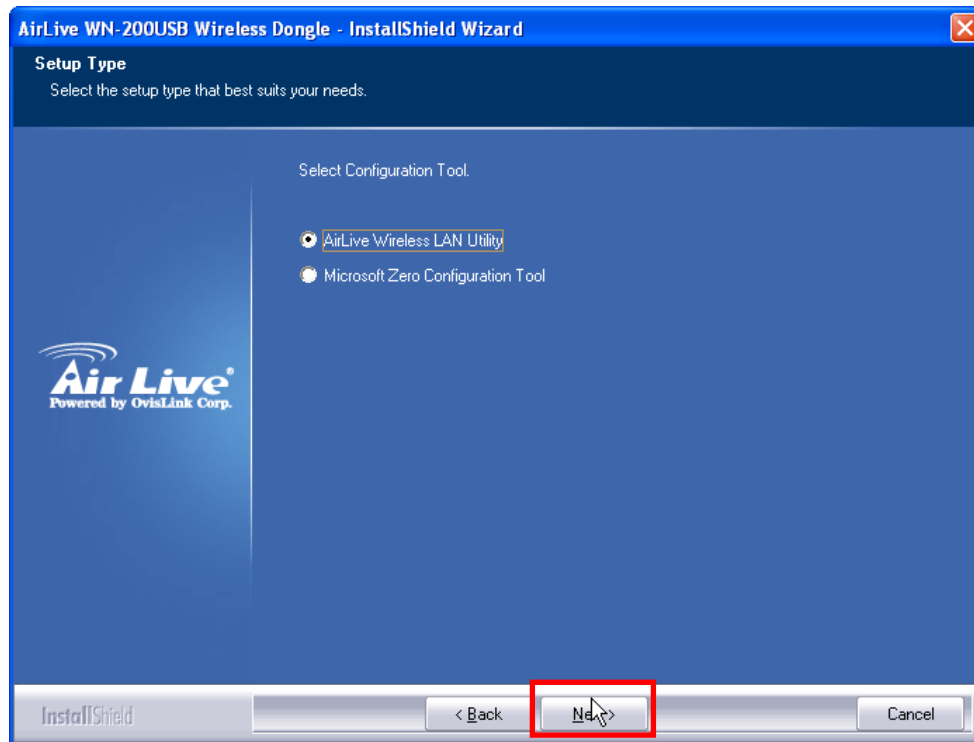


4. It is recommended that users choose “install driver and AirLive WLAN utility”. If you want to update the driver only, choose “Install driver only”. Click “**Next**” to continue.

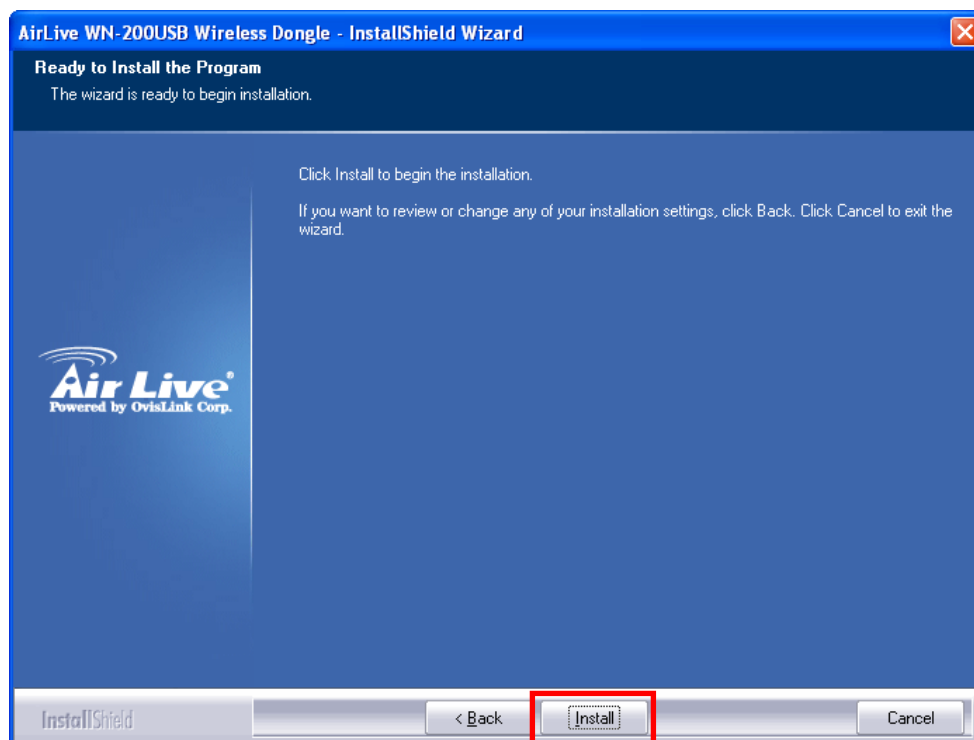




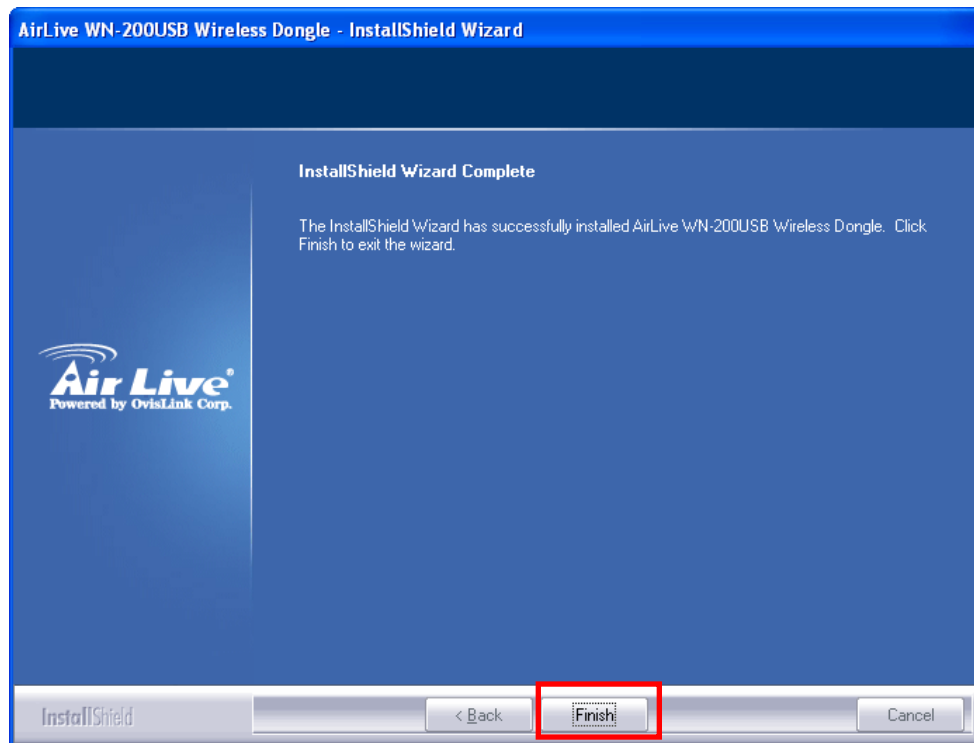
5. It's recommended to select "AirLive Wireless LAN Utility", which provides fully access to all functions of this wireless network card. If you prefer to use the wireless configuration tool provided by Windows XP or Vista, please select "Microsoft Zero Configuration Tool" then click "**Next**".



6. You will see the following message, please click "**Install**" to start utility installation.








7. Please wait while the install procedure is running. When you see this message, please click **“Finish”** to complete the driver installation process.



8. After installation is complete, wireless configuration utility will be shown in the desktop of your computer automatically. You will also see an icon at the lower-right corner of your windows system. If you put the mouse cursor on the icon, the status of wireless card will be displayed as a popup balloon.



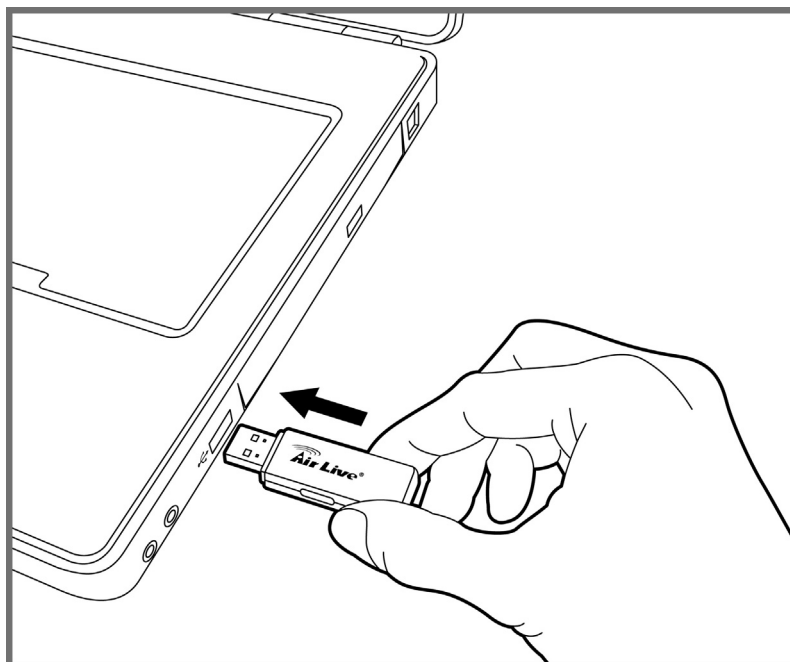
Users can easily check current status of WN-200USB in system tray, as shown below.

-  **Wireless connection is established, good signal reception.**
-  **Wireless connection is established, normal signal reception**
-  **Wireless connection is established, weak signal reception**
-  **No connection to the WN-200USB.**
-  **The WN-200USB is unplugged.**

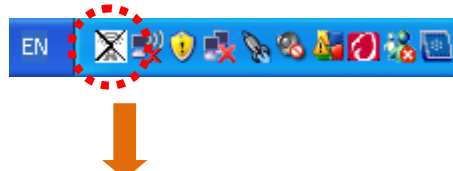
## 2.5 Hardware Installation

Please follow the following instructions to install your new wireless network card:

1. Insert the WN-200USB into an available USB 2.0 port of your PC/Notebook when PC/Notebook is power-on status. Never use force to insert the WN-200USB, if you feel it's stuck, flip the dongle over and try again.



2. Once inserting the WN-200USB properly, the icon in system tray will change from "unplugged" status to "wireless connection is established" status.





## 2.6 LED Table

The LED Indicators gives real-time information of systematic operation status. The following table provides descriptions of LED status and their meaning.



LED	Color	Status	Description
LNK/ACT	● Green	ON	Associated with the network
		OFF	Not associated with the network
		Blink	Data being transferred

# 3

## Configuration of WN-200USB

The WN-200USB offers two different types of management interface. You can configure through AirLive Wireless LAN Utility and built-in Windows Zero Configuration (WZC) which dynamically selects a wireless network to connect. In this chapter, we will introduce how to apply these two methods to make use of WN-200USB.

### 3.1 Important Information

Before using the AirLive Utility, please make that you have referred to Chapter 2.4 and Chapter 2.5 to install AirLive Utility and insert WN-200USB into a available USB port.

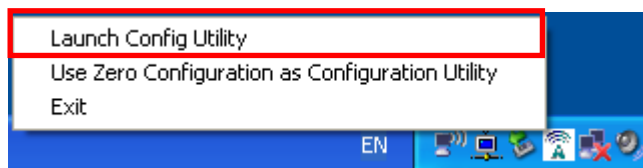
### 3.2 Using AirLive Wireless LAN Utility

If the Wireless Utility program is running, you can double-click the icon in the System Tray or right-click the icon and select "**Launch Config Utility**" to open the application.

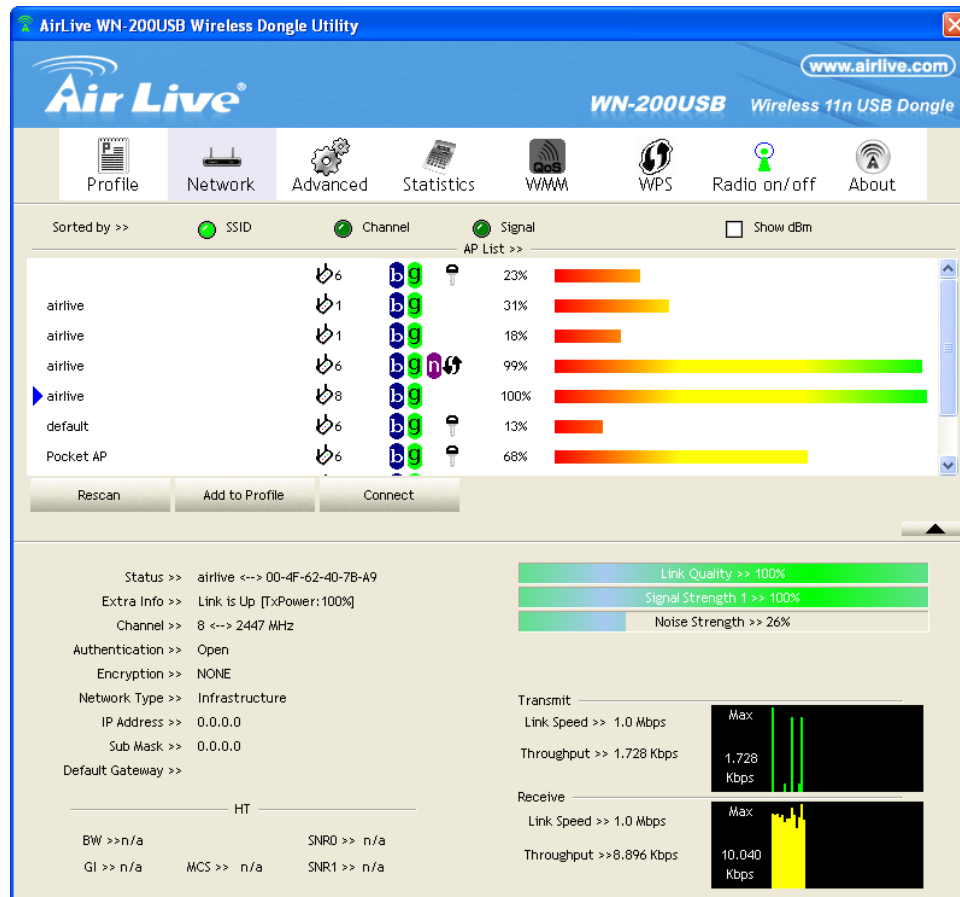
#### 3.2.1 Status Information

The menu options available from the System Tray icon are:

- **Launch Config Utility:** This will display the main screen of the Utility.
- **Use Zero Configuration as configuration Utility:** Wireless Zero Configuration (WZC), is a service of Microsoft Windows which dynamically selects a wireless network to connect.
- **Exit:** Terminate the connection to the WN-200USB.



Double-click the Icon to execute the utility, where you can select the Wireless network you wish to join.



### 3.2.2 Menu Structure of AirLive Wireless LAN Utility

The menu structure of AirLive Wireless LAN Utility is divided into two parts: *Top Menu* and *Setup Area*.

- **Top Menu:** You can select a setup function (Profile, Network, etc.) from top menu, and corresponding configuration items will be displayed at Setup area.
- **Setup Area:** Once clicking one of the functions from Top Menu, the related configurations will be displayed in Setup Area

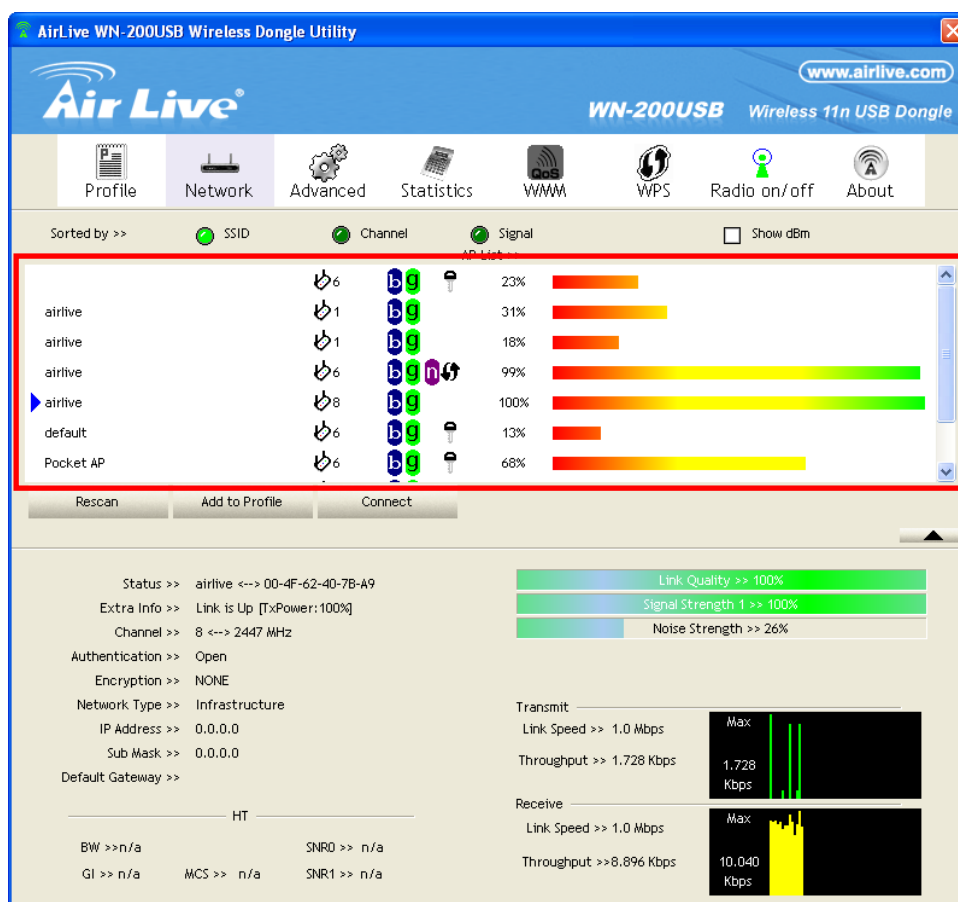




### 3.2.3 Network Screen

This screen is displayed when you double-click the system tray icon. You can also click the Network tab in the Top Menu

When you open the utility program, it will scan all the channels to find all the access points/stations within the accessible range and automatically connect to one of the wireless devices which have the highest signal strength.



<b>SSID</b>	The SSID (up to 32 printable ASCII characters) is a unique name identified in a WLAN.
<b>Network Type</b>	It displays the Network type in use, Infrastructure for BSS, Ad-Hoc for IBSS network.
<b>Channel</b>	The channel used by the Wireless network.
<b>Wireless Mode</b>	AP support wireless mode. It may support 802.11a, 802.11b, 802.11g or 802.11n wireless mode
<b>Security-Enable</b>	Whether AP provides security-enabled wireless network.
<b>Signal</b>	This is displayed as percentage (0 ~ 100%) of specified network.
<b>Rescan</b>	Click this button to rescan for all Wireless networks.
<b>Add to Profile</b>	Click this button to add the selected AP to Profile setting. It will bring up profile page and save user's setting to a new profile.

<b>Connect</b>	Click this button to connect the Wireless network.
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### 3.2.3.1 Wireless Network Sequence (order)

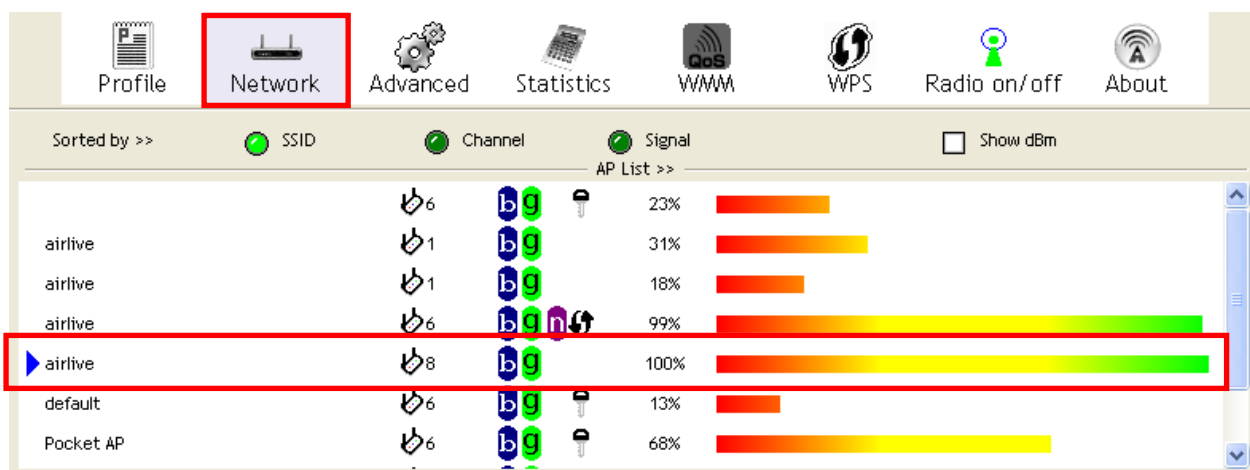
User have three ways (SSID, Channel or Signal) to make order of the wireless network, just click the radio buttons in left side of **Sorted by** to arrange the Wireless network in the desired order.











### 3.2.3.2 To connect to a wireless network


Click the name of the wireless network to which you want to connect, and then click "Connect" button to connect chosen wireless network..

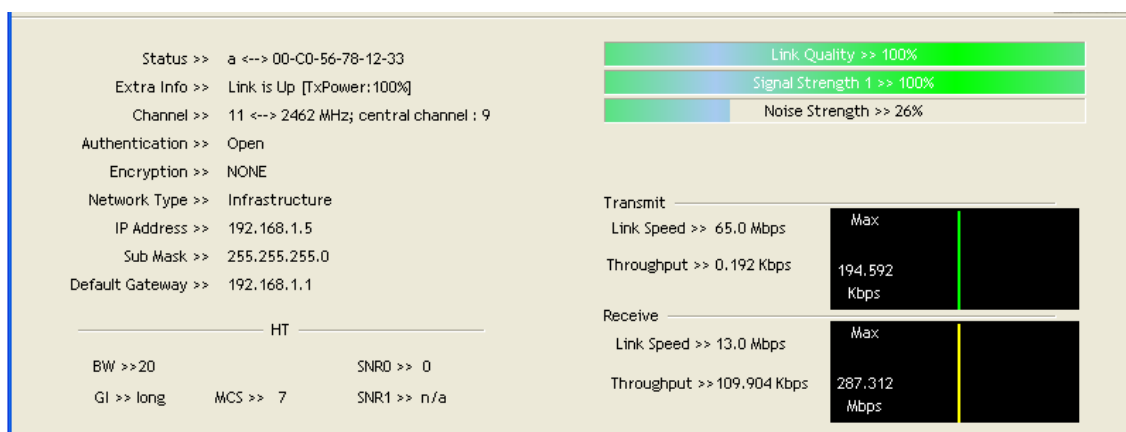
Note that once you are connected to a wireless network, the Network screen will identify the current wireless network with a **blue arrow icon**, as shown below.



	It indicates network type is infrastructure mode.
	It indicates network type is Ad-hoc mode.
	802.11b wireless mode
	802.11g wireless mode
	802.11n wireless mode
	It indicates security-enabled wireless network.
	It shows the information of Link Status Section.
	It hides the information of Link Status Section.

### 3.2.3.3 Link Status Screen

The Link Status section displays the detailed information of the current connection. Click  button to show the status screen.



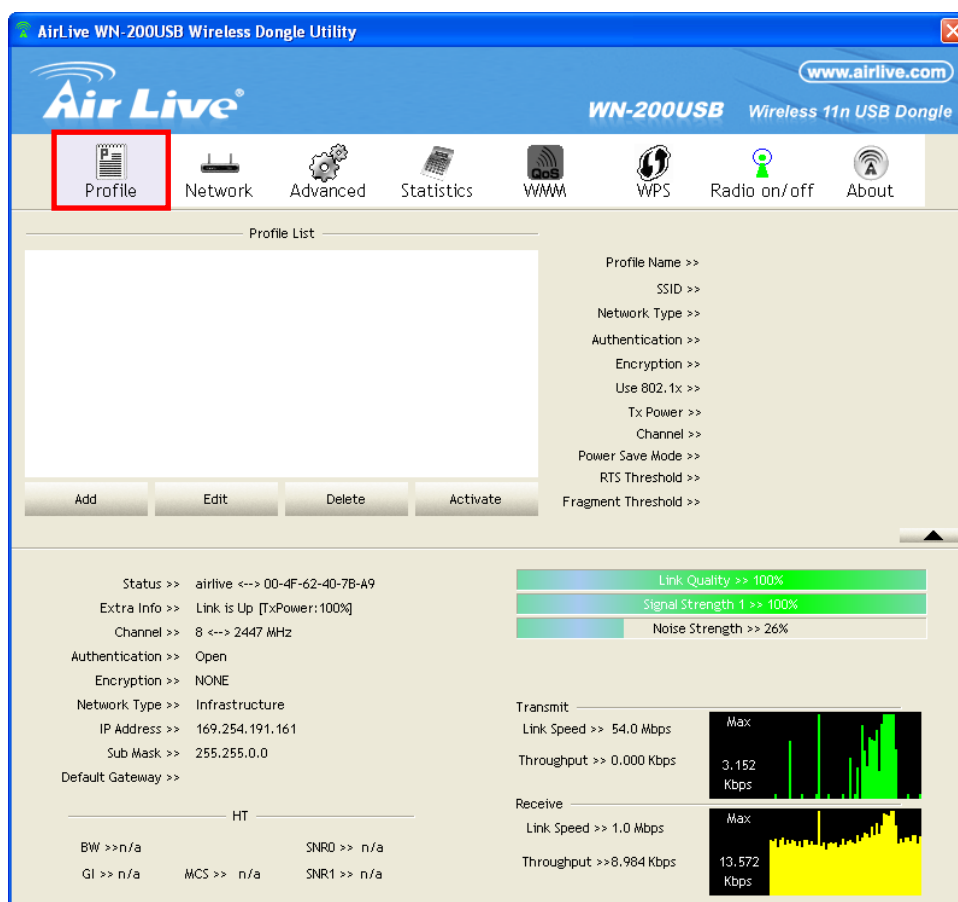
The below table explain each item of them.

<b>Status</b>	It will indicate the current link status.
<b>Extra Info</b>	It shows the link status.
<b>Channel</b>	It displays the current channel in use.

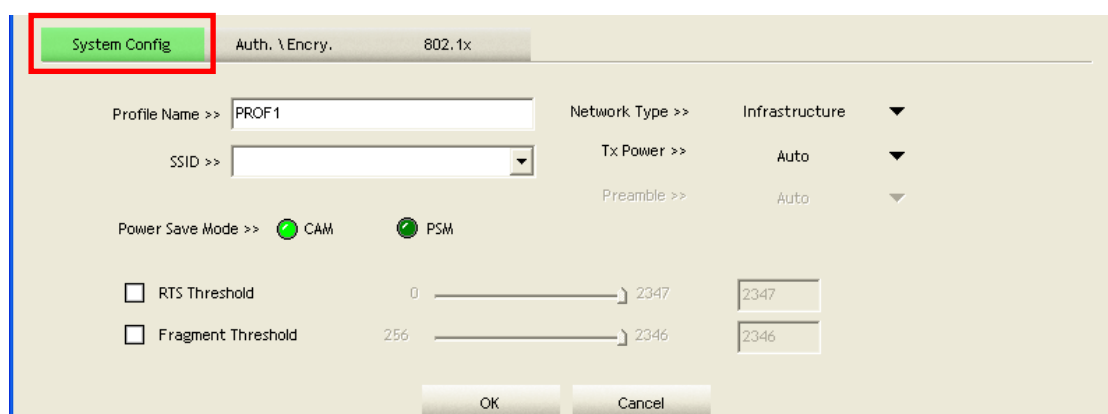
<b>Authentication</b>	It will indicate the current authentication mode in use.
<b>Encryption</b>	It shows the wireless security that the wireless network is using.
<b>Network Type</b>	This will indicate "Infrastructure" or "Ad-hoc".
<b>IP Address</b>	It shows the current IP address on the wireless interface.
<b>Subnet Mask</b>	Subnet mask for the current IP address.
<b>Default Gateway</b>	Gateway IP address associated with the current IP address.
<b>HT</b>	It displays current HT status in use (802.11n wireless card only).
<b>Link Quality</b>	It displays connection quality based on signal strength and TX/RX packet error rate.
<b>Signal Strength (1~3)</b>	It receives signal strength (1~3), user can choose to display as percentage or dBm format.
<b>Noise Strength</b>	It displays noise signal strength.
<b>Link Speed</b>	It will show current transmit rate and receive rate.
<b>Throughout</b>	It displays transmits and receive throughput in unit of Mbps.

### 3.2.4 Profile Screen

Click **"Add to Profile"** button on the Network tab, or you can choose **"Profile"** tab of Top Menu, then click **"Add"** button, the Add Profile window will pop up. Users can setup the general settings, encryption and authentication settings and so on.



### 3.2.4.1 System Config



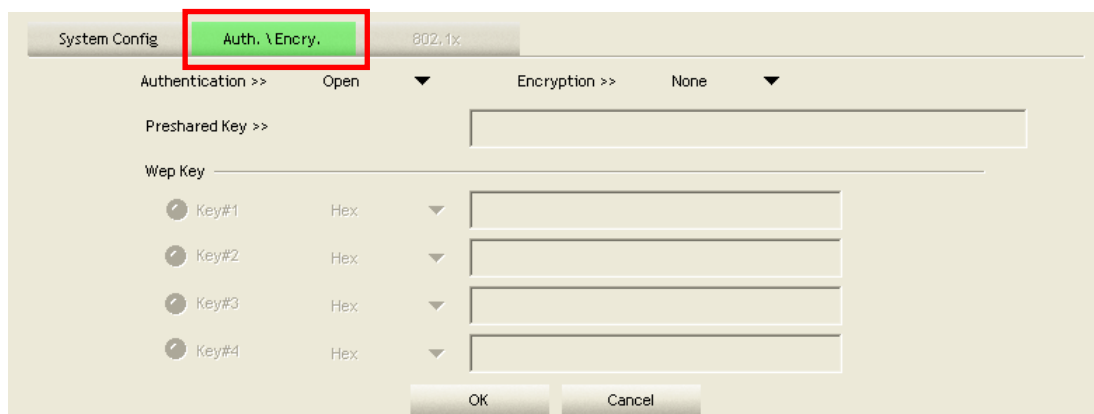
#### Profile Name

Enter or select a suitable name for this profile. Each profile must have a unique name.



<b>SSID</b>	If the desired wireless network is currently available, you can select its SSID. Otherwise, type in the SSID of the desired wireless network.
<b>Power Save Mode</b>	Select either CAM (Constantly Awake Mode) or PSM (Power Saving Mode).
<b>RTS Threshold</b>	Select a value within the range of 0 to 2347 bytes
<b>Fragment Threshold</b>	Select the value from 256 to 2346 bytes. The default value is 2346.
<b>Network Type</b>	Select the desired option: <ul style="list-style-type: none"> <li>● <b>Infrastructure</b>: Select this to connect to an Access point.</li> <li>● <b>Ad-Hoc</b>: Select this if you are connecting directly to another computer.</li> </ul>
<b>Tx Power</b>	Select the Tx (transmission) power according to the real environment.
<b>Preamble</b>	The preamble defines the length of the CRC (cyclic redundancy check). Select either <i>Auto</i> or <i>Long Preamble</i> .
<b>OK button</b>	Click this button to save the settings and close the page.
<b>Cancel button</b>	The " <b>Cancel</b> " button will discard any data you have entered and exit the page.

### 3.2.4.2 Auth./Encyp.



The screenshot shows the configuration interface for the WN-200USB device. The 'Auth. \ Encryp.' tab is selected and highlighted with a red box. The interface includes the following elements:

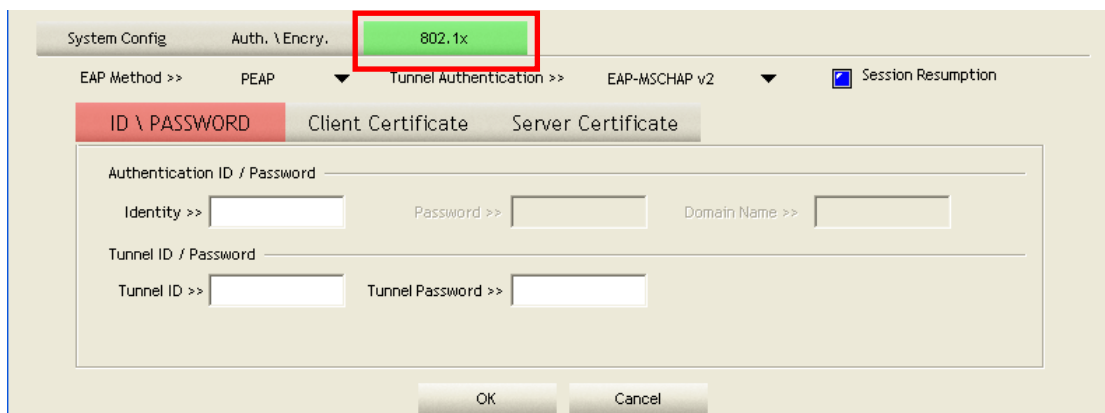
- System Config** tab (selected)
- Auth. \ Encryp.** tab (highlighted with a red box)
- 802.11x** tab
- Authentication >>** dropdown menu (set to 'Open')
- Encryption >>** dropdown menu (set to 'None')
- Preshared Key >>** text input field
- Wep Key** section with four rows:
  - Key#1: Hex input field
  - Key#2: Hex input field
  - Key#3: Hex input field
  - Key#4: Hex input field
- OK** and **Cancel** buttons at the bottom.

<b>Authentication</b>	<p>You MUST select the option to match the Wireless LAN you wish to join. The available options are:</p> <ul style="list-style-type: none"> <li>● <b>Open:</b> Broadcast signals are not encrypted. This method can be used only with no encryption or with WEP.</li> <li>● <b>Shared:</b> Broadcast signals are encrypted using WEP. This method can only be used with WEP.</li> <li>● <b>LEAP:</b> Light Extensible Authentication Protocol is a pre-EAP, Cisco-proprietary protocol. If selected, you have to enter the identity, password and domain name of your computer.</li> <li>● <b>WPA:</b> This version of WPA requires a Radius Server on your LAN to provide the client authentication according to the 802.1x standard. Data transmissions are encrypted using the WPA standard.</li> <li>● <b>WPA-PSK:</b> PSK means "Pre-shared Key". You must enter this Passphrase value; it is used for both authentication and encryption.</li> <li>● <b>WPA2:</b> This version of WPA2 requires a Radius Server on your LAN to provide the client authentication according to the 802.1x standard. Data transmissions are encrypted using the WPA2 standard.</li> <li>● <b>WPA2-PSK:</b> This is a further development of WPA-PSK, and offers even greater security. You must enter this Passphrase value; it is used for both authentication and encryption.</li> <li>● <b>WPA None:</b> If selected, you can only set encryption and WPA-Preshared Key settings.</li> </ul>
<b>Encryption</b>	<p>The available options depend on the Authentication method selected above. The possible options are:</p> <ul style="list-style-type: none"> <li>● <b>None:</b> No data encryption is used.</li> <li>● <b>WEP:</b> If selected, you must enter the WEP data shown below. This WEP data must match the Access Point or other Wireless stations.</li> <li>● <b>AES, TKIP:</b> These options are available with WPA-PSK, WPA2-PSK, WPA and WPA2. Select the correct option.</li> </ul>
<b>Use 802.1x</b>	<p>This setting only takes effect when using WPA or WPA2 mode. If enabled, click the <b>802.1x</b> tab to configure the related settings.</p>

<b>WPA Preshared Key</b>	For WPA-PSK and WPA2-PSK modes, you need to enter the desired value (8~63 characters). Data is encrypted using a 256Bit key derived from this key. Other Wireless Stations must use the same key.
<b>WEP Key (1~4)</b>	<p>This setting is only available for Open or Shared mode. There are 2 modes:</p> <ul style="list-style-type: none"> <li>● <b>Hex:</b> Only "A~F", "a~f", and "0~9" are allowed to be entered.</li> <li>● <b>ASCII:</b> Numerical values, characters or signs are all allowed to be entered.</li> </ul>

### 3.2.4.3 802.1X

When using WPA or WPA2 mode in **Auth. \Encry**, the **802.1x** tab will show in right side of **Auth. \Encry** tab.



The screenshot shows the configuration interface for 802.1X authentication. The '802.1x' tab is highlighted with a red box. The interface includes the following elements:

- System Config** and **Auth. \Encry.** tabs at the top.
- EAP Method >>** dropdown menu set to **PEAP**.
- Tunnel Authentication >>** dropdown menu set to **EAP-MSCHAP v2**.
- Session Resumption** checkbox, which is checked.
- ID \ PASSWORD** tab is selected, showing fields for:
  - Authentication ID / Password:**
    - Identity >>** (text input)
    - Password >>** (text input)
    - Domain Name >>** (text input)
  - Tunnel ID / Password:**
    - Tunnel ID >>** (text input)
    - Tunnel Password >>** (text input)
- Client Certificate** and **Server Certificate** tabs are also visible.
- OK** and **Cancel** buttons at the bottom.

<b>EAP Method</b>	<p>There are 5 methods in the drop-down list.</p> <ul style="list-style-type: none"> <li>● <b>PEAP:</b> Protect Extensible Authentication Protocol. PEAP transport securely authentication data by using tunneling between PEAP clients and an authentication server. PEAP can authenticate wireless LAN clients using only server-side certificates, thus simplifying the implementation and administration of a secure wireless LAN.</li> <li>● <b>TLS-Smart Card:</b> Transport Layer Security. Provides for certificate-based and mutual authentication of the client and the network. It relies on client-side and server-side certificates to perform authentication and can be used to dynamically generate user-based and session-based WEP keys to secure subsequent communications between the WLAN client and the access point.</li> <li>● <b>TTLS:</b> Tunneled Transport Layer Security. This security method provides for certificate-based, mutual authentication of the client and network through an encrypted channel. Unlike EAP-TLS, EAP-TTLS requires only server-side certificates.</li> <li>● <b>EAP-FAST:</b> Flexible Authentication via Secure Tunneling. It was developed by Cisco. Instead of using a certificate, mutual authentication is achieved by means of a PAC (Protected Access Credential) which can be managed dynamically by the authentication server. The PAC can be provisioned (distributed one time) to the client either manually or automatically. Manual provisioning is delivery to the client via disk or a secured network distribution method. Automatic provisioning is an in-band, over the air, distribution.</li> <li>● <b>MD5-Challenge:</b> Message Digest Challenge. Challenge is an EAP authentication type that provides base-level EAP support. It provides for only one-way authentication - there is no mutual authentication of wireless client and the network.</li> </ul>
<b>Tunnel Authentication</b>	Select the desired option from the drop-down list.
<b>Session Resumption</b>	After reconnecting the signal which broke up, you can enable the session resumption to reduce the transferring packet to accelerate the speed.
<b>Authentication ID / Password</b>	Enter the required data into the fields.

<b>Tunnel ID / Password</b>	Enter the ID and Password for the tunnel.
<b>Use Client certificate</b>	Click the checkbox to enable certificate authority server function.
<b>Use certificate chain</b>	When the EAP authentication type such as TLS, TTLS or PEAP is selected and required a certification to tell the client what server credentials to accept from the authentication server in order to verify the server, you have to enable this function and enter the required data in the related fields.

#### 3.2.4.4 General Setting

If you want to do the general settings, please follow the instructions below.

##### To add a profile

1. On the Profile tab, click “**Add**” button.
2. Complete and verify the settings on this screen are correct.
3. Click “**OK**” button.

##### To delete a profile

1. On the Profile tab, select the profile that you want to delete.
2. Click “**Delete**”.

##### To edit a profile

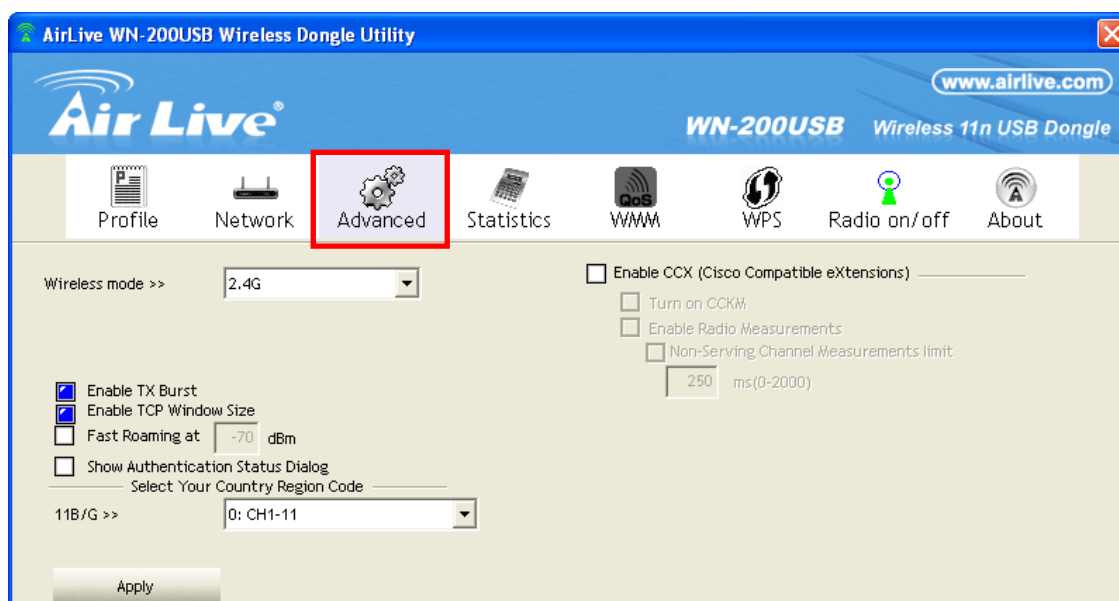
1. On the Profile tab, select the profile that you want to edit.
2. Click “**Edit**” button.
3. Change the profile settings as necessary.
4. Click “**OK**” button.

##### To enable a profile

1. In the list of available profiles, click the profile that you want to enable.
2. Click “**Activate**” button.

#### 3.2.5 Advance Screen

Click **Advanced** tab in the Top Menu, you can configure the detailed settings in this page.



<b>Wireless Mode</b>	Select the desired wireless mode.
<b>Enable Tx Burst</b>	Tx Burst enables the adapter to deliver better throughput during a period of time but the function only takes effect when connecting with the AP which also supports Tx Burst.
<b>Enable TCP Window Size</b>	The TCP Window is the amount of data which a sender can send on a particular connection before it gets an acknowledgement back from the receiver that it has gotten some of it. When the router or AP which the adapter is connecting to has set up the TCP Window, you can enable the parameter to meet the data size for the router or AP connection. The larger TCP Window the better performance.
<b>Fast Roaming at</b>	When you want to fast roaming to the network nearby without intercepting the wireless connection especially the adapter is applied to the multimedia application or a voice call, you can enable this function.
<b>Show Authentication Status Dialog</b>	When connecting to an AP with authentication, if enabling this function, it will display dialogs about 802.1x authentication during the process.
<b>Select Your Country Region Code</b>	There are 8 kinds of Country Region Codes to choose from.

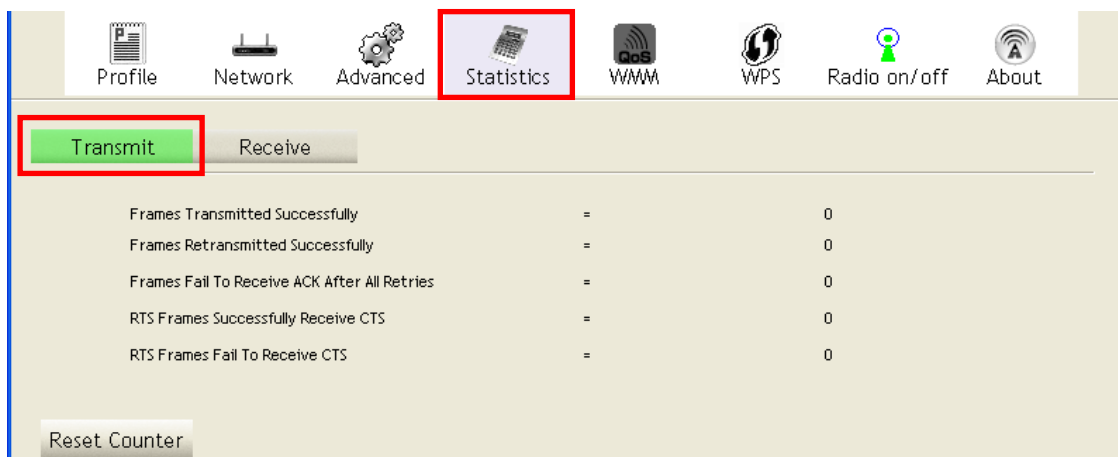


<b>Enable CCX (Cisco Compatible eXtensions)</b>	<p>CCX (Cisco Compatible Extensions) is developed by Cisco for the radio monitoring and fast roaming.</p> <ul style="list-style-type: none"> <li>● Turn on CCKM: During normal operation, LEAP-enabled client devices mutually authenticate with a new access point by performing a complete LEAP authentication, including communication with the main RADIUS server. When you configure your wireless LAN for fast re-association, however, LEAP-enabled client devices roam from one access point to another without involving the main server. Using Cisco Centralized Key Management (CCKM), an access point configured to provide Wireless Domain Services (WDS) takes the place of the RADIUS server and authenticates the client so quickly that there is no perceptible delay in voice or other time-sensitive applications.</li> <li>● Enable Radio Measurement: When this parameter is enabled, the Cisco AP can run the radio monitoring through the associated CCX-compliant clients to continuously monitor the WLAN radio environment and discover any new Aps that are transmitting beacons.</li> </ul>
<b>Apply</b>	Click this button to save the changes you made.

### 3.2.6 Statistics Screen

Click **Statistics** tab in the Top Menu, the page will display the transmitted and received results.

#### 3.2.6.1 Transmit

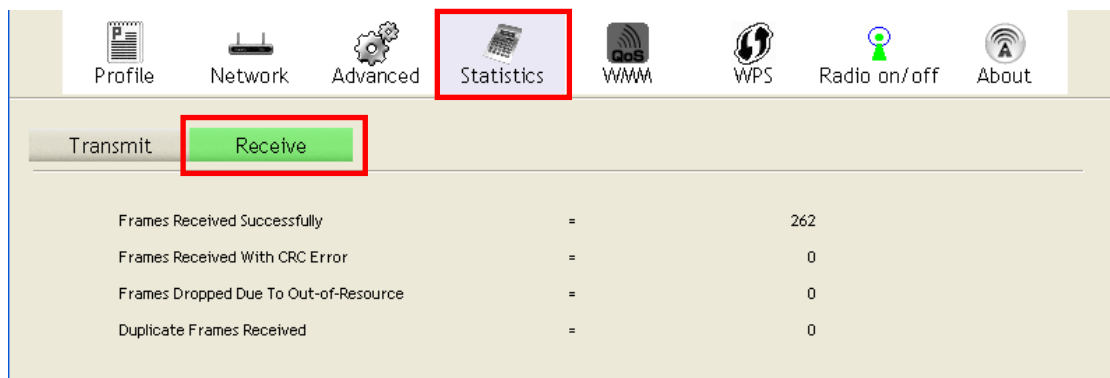


Transmit		
Frames Transmitted Successfully	=	0
Frames Retransmitted Successfully	=	0
Frames Fail To Receive ACK After All Retries	=	0
RTS Frames Successfully Receive CTS	=	0
RTS Frames Fail To Receive CTS	=	0

Reset Counter

<b>Frames Transmitted Successfully</b>	Frames successfully sent.
<b>Frames Retransmitted successfully</b>	Frames successfully sent with one or more retries.
<b>Frames Fail To Receive ACK After All Retries</b>	Frames failed to transmit after hitting retry limit.
<b>RTS Frames Successfully Receive CTS</b>	Successfully receive CTS (Clear To Send) after sending RTS (Request To Send) frame.
<b>RTS Frames Fail To Receive CTS</b>	Failed to receive CTS (Request To Send) after sending RTS (Clear To Send).

### 3.2.6.2 Receive

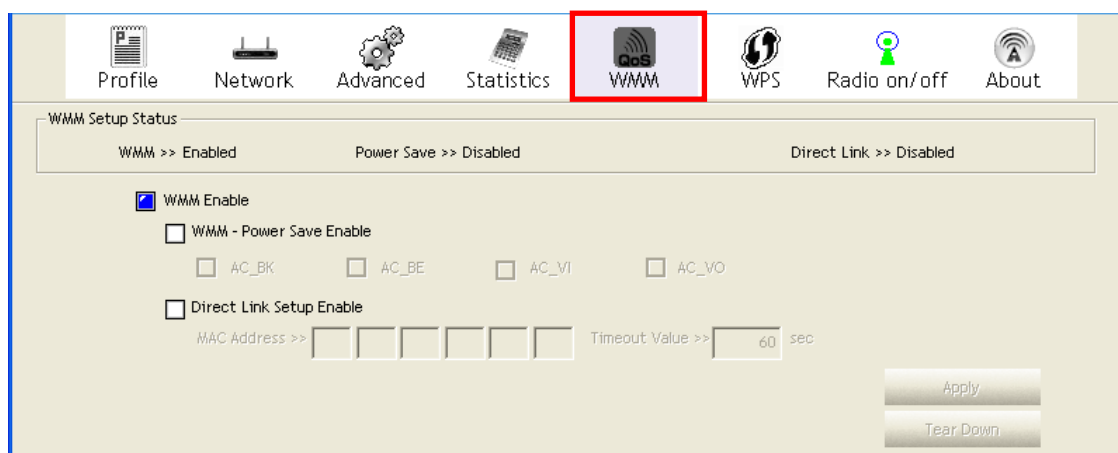


<b>Frames Receive Successfully</b>	Frames received successfully.
<b>Frames Receive With CRC Error</b>	Frames received with CRC error.
<b>Frames Dropped Due To Out-of-Resource</b>	Frames dropped due to resource problem.

<b>Duplicate Frames Received</b>	Frames received more than twice.
<b>Reset Counter</b>	Click the button to reset counters to zero.

### 3.2.7 WMM Screen

Click **WMM** tab in the Top Menu, and you will see the following screen:



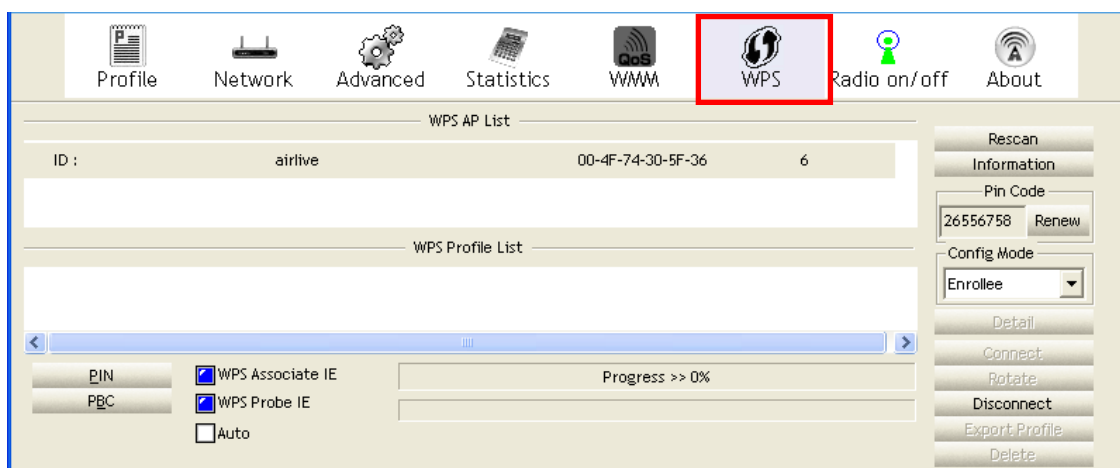
<b>WMM Enable</b>	WMM is short for Wi-Fi Multimedia. It is a standard created to define quality of service (QoS) in Wi-Fi networks. It is a precursor to the upcoming IEEE802.11e WLAN QoS draft standard, which is meant to improve audio, video and voice applications transmitted over Wi-Fi. WMM adds prioritized capabilities to Wi-Fi networks and optimizes their performance when multiple concurring applications, each with different latency and throughput requirements, compete for network resources. Click the check box and then click "Apply" button to apply this function to the system.
<b>WMM - POWER SAVE ENABLE</b>	Click the check box, and select the desired type of power saving mode.
<b>Direct Link Setup Enable</b>	Enable the check box and you may start to set MAC Address, Timeout Value and check the DLS Status. Click " <b>Apply</b> " button and this setting will be applied to the system.

<b>MAC Address</b>	Enter the remote system which you want to connect with. When you want to enable this function, you have to make sure that your wireless network supports WMM function and then enter the MAC address of the adapter which wants to connect with the remote system.
<b>Timeout Value</b>	The utility performs time-outs so that the program does not sit idle waiting for input that may never come. Set a value to apply to the system with WMM.
<b>Apply</b>	Click this button to save the changes you made.
<b>Tear Down</b>	Click this button will disconnect the selected Direct Link Setup.

### 3.2.8 WPS Screen

WPS (Wi-Fi Protected Setup) can simplify the process of connecting any device to the wireless network by using the push button configuration (PBC) on the Wireless Access Point, or entering a PIN code.

You will use the WPS screen when you try to connect the wireless network with the WPS function.





<b>WPS AP List</b>	It displays the information of surrounding APs with WPS IE from last scan result. List information includes SSID, BSSID, Channel, ID (Device Password ID) and Security-Enabled.
--------------------	---

<b>Rescan</b>	Click this button to update information on surrounding wireless network.
<b>Information</b>	Display the information about WPS on the selected network. List information includes Authentication Type, Encryption Type, Config Methods, Device Password ID, Selected Registrar, State, Version, AP Setup Locked, UUID-E and RF Bands.
<b>PIN Code</b>	Enter the PIN code displayed in the following field to the WPS screen of the access point. When STA is Enrollee, you can use " <b>Renew</b> " button to re-generate new PIN Code.
<b>Config Mode</b>	Our station role-playing as an <i>Enrollee</i> or an external <i>Registrar</i> .
<b>Detail</b>	Information about Security and Key in the credential.
<b>Connect</b>	Click this button to connect to the selected network inside credentials.
<b>Rotate</b>	Click this button to rotate to connect to the next network inside credentials.
<b>Disconnect</b>	Click this to stop WPS action and disconnect this active link, and then select the last profile at the Profile Page of utility if exist. If there is an empty profile page, the driver will select any non-security AP.
<b>Export Profile</b>	Export all credentials to Profile.
<b>Delete</b>	Click to Delete an existing credential. And then select the next credential if exist. If there is an empty credential, the driver will select any non-security AP.
<b>PIN</b>	Start to add to Registrar using PIN configuration method. If STA Registrar, remember that enter PIN Code read from your Enrollee before starting PIN.
<b>PBC</b>	Start to add to AP using PBC configuration method.
<b>WPS associate IE</b>	Send the association request with WPS IE during WPS setup. It is optional for STA.
<b>WPS Probe IE</b>	Send the probe request with WPS IE during WPS setup. It is optional for STA.
<b>Progress Bar</b>	Display rate of progress from Start to Connected status.
<b>Status Bar</b>	Display currently WPS Status.

### 3.2.9 Radio on/off Button

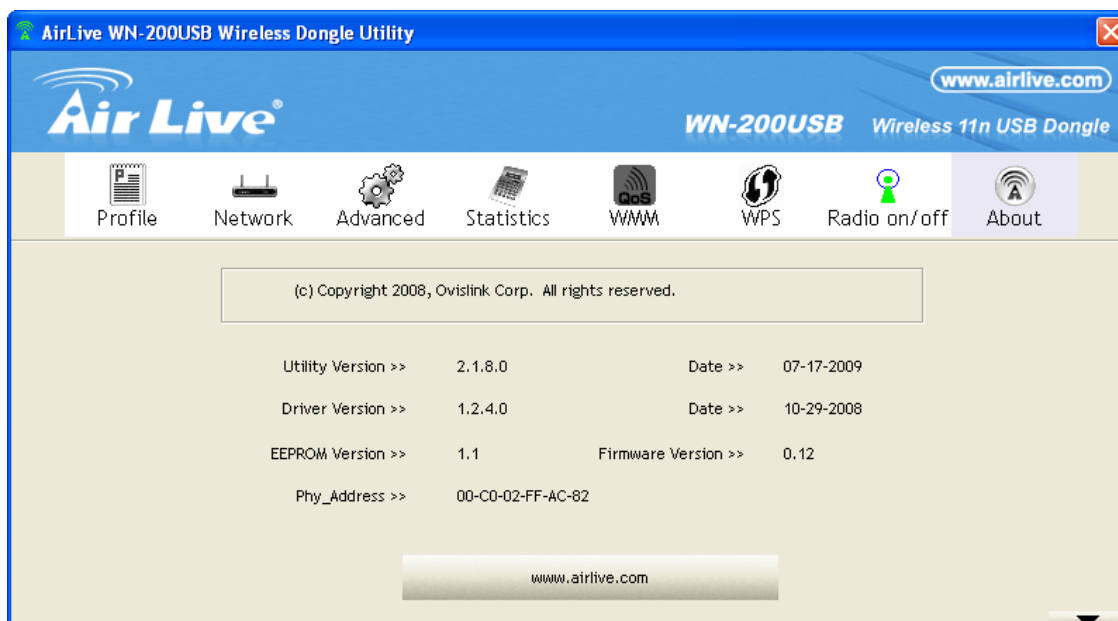
You can turn the radio signal on/off by clicking this button.



 Radio on/off	The radio signal is on.
 Radio on/off	The radio signal is off.

### 3.2.10 About Screen

This screen displays details of the traffic sent or received on the current Wireless network.





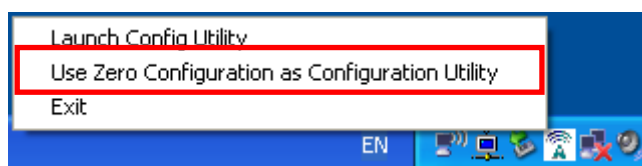
This tab shows the following information:

- Utility Version, Date
- Driver Version, Date
- EEPROM Version
- Firmware Version
- Phy\_Address

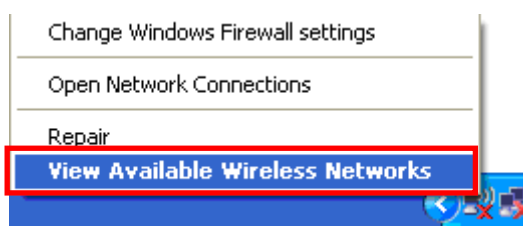
### 3.3 Using Windows Zero Configuration

Windows XP and Vista has a built-in wireless network configuration utility, called as 'Windows Zero Configuration' (WZC). You can also use WZC to configure your wireless network parameter:

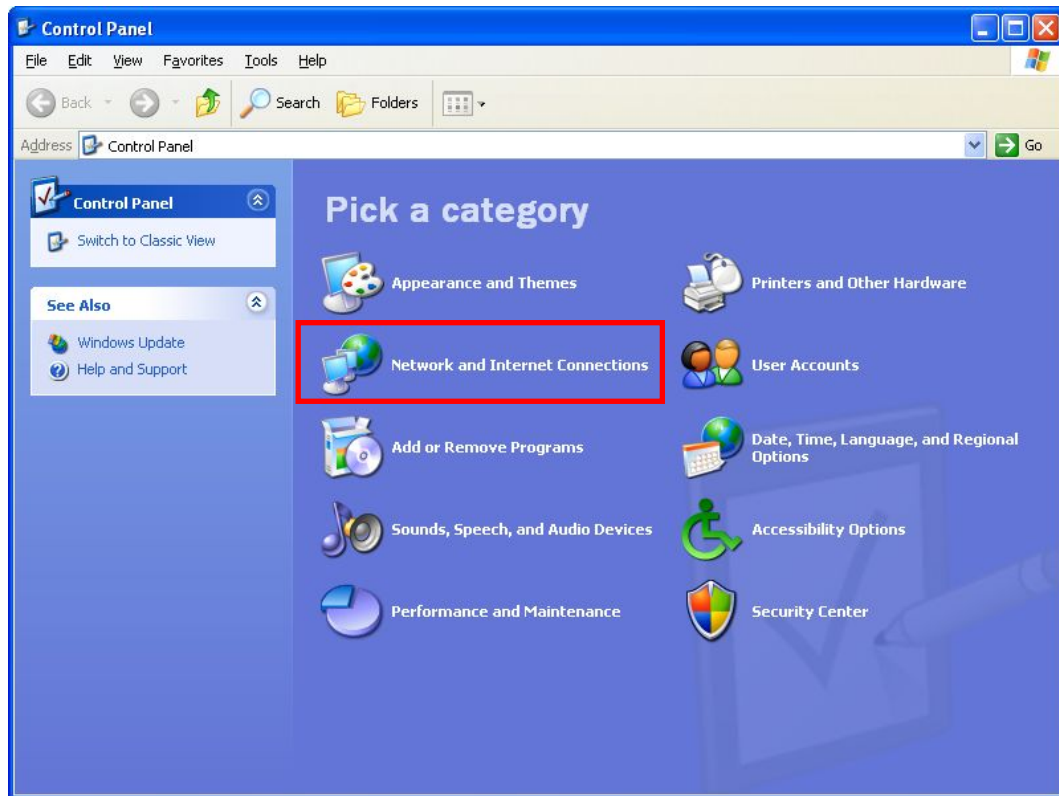
1. Right-click the icon of AirLive Wireless LAN Utility and select **"Use Zero Configuration as Configuration utility"**.



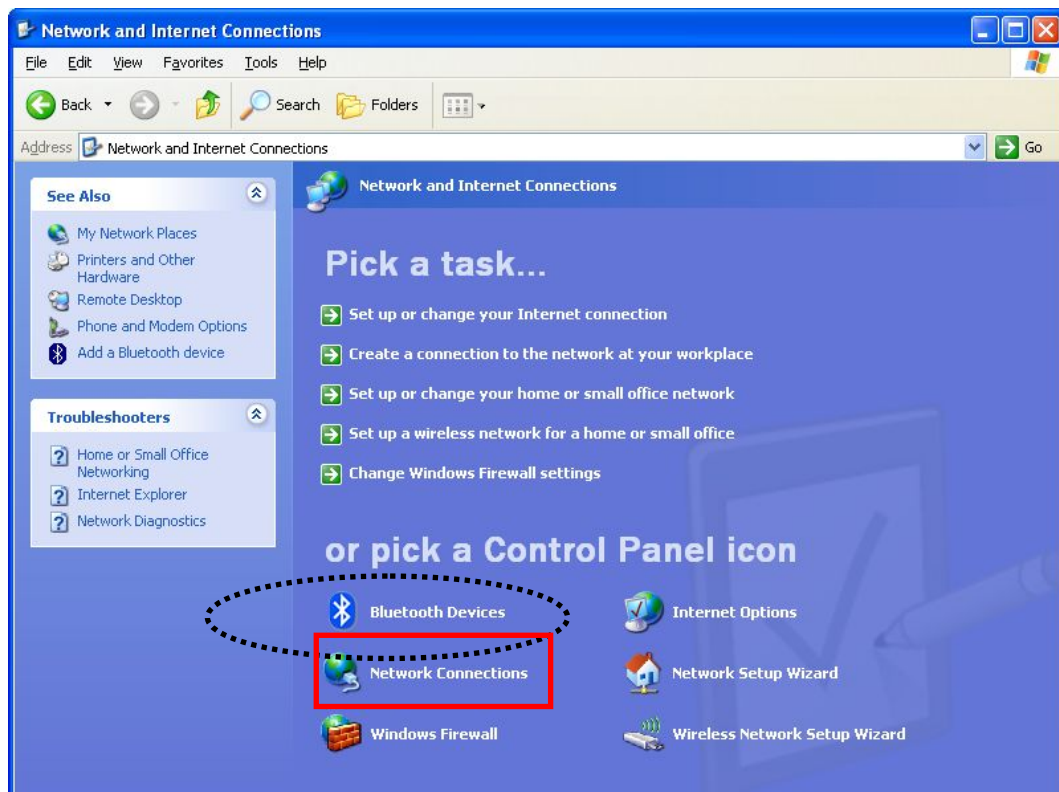
2. Right click Windows Zero Configuration icon and select **"View Available Wireless Networks"**. If you can not find the icon, please follow the procedures from step 3 to step 5.



3. Click **"Start"** button (should be located at the bottom-left corner of windows desktop), click **"Control Panel"**, then click **"Network and Internet Connections"** in Control Panel.



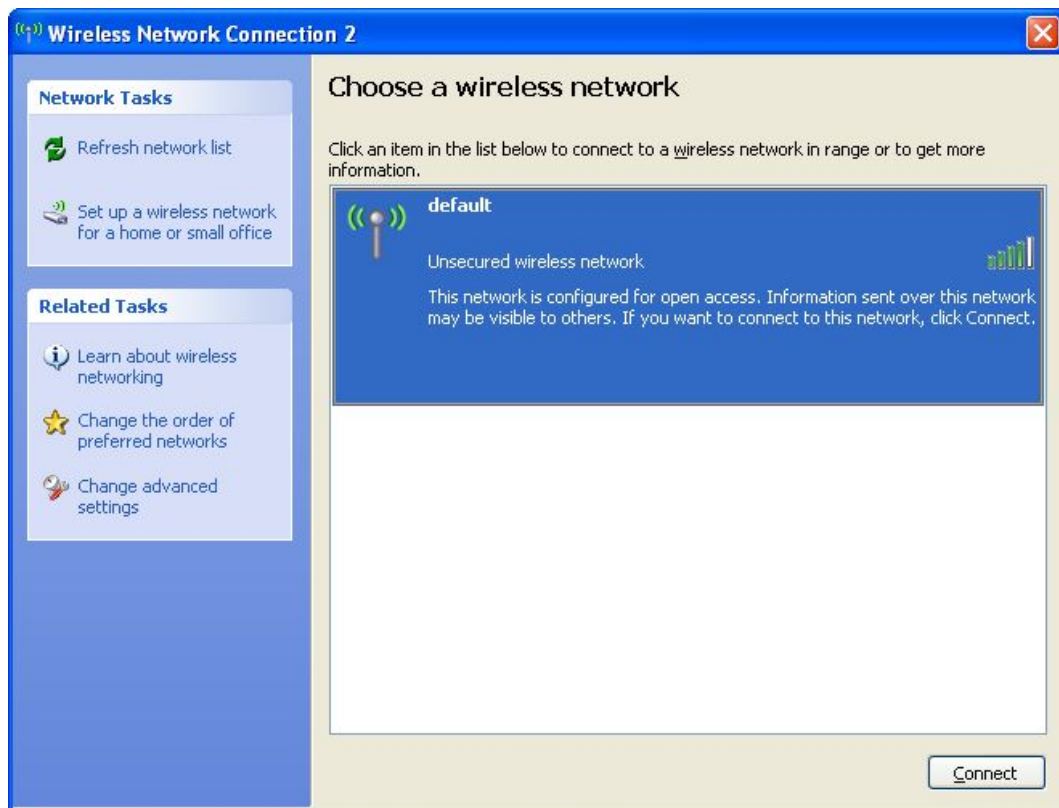
4. Click “**Network Connections**”.



5. Right-click **“Wireless Network Connection 2”** (it may have a number as suffix if you have more than one wireless network card, please make sure you right-click the AirLive 802.11n Wireless Dongle), then select **“View Available Wireless Networks”**.



6. All wireless access points in proximity will be displayed here. If the access point you want to use is not displayed here, please try to move your computer closer to the access point, or you can click 'Refresh network list' to rescan access points. Click the access point you want to use if it's shown, then click 'Connect'.



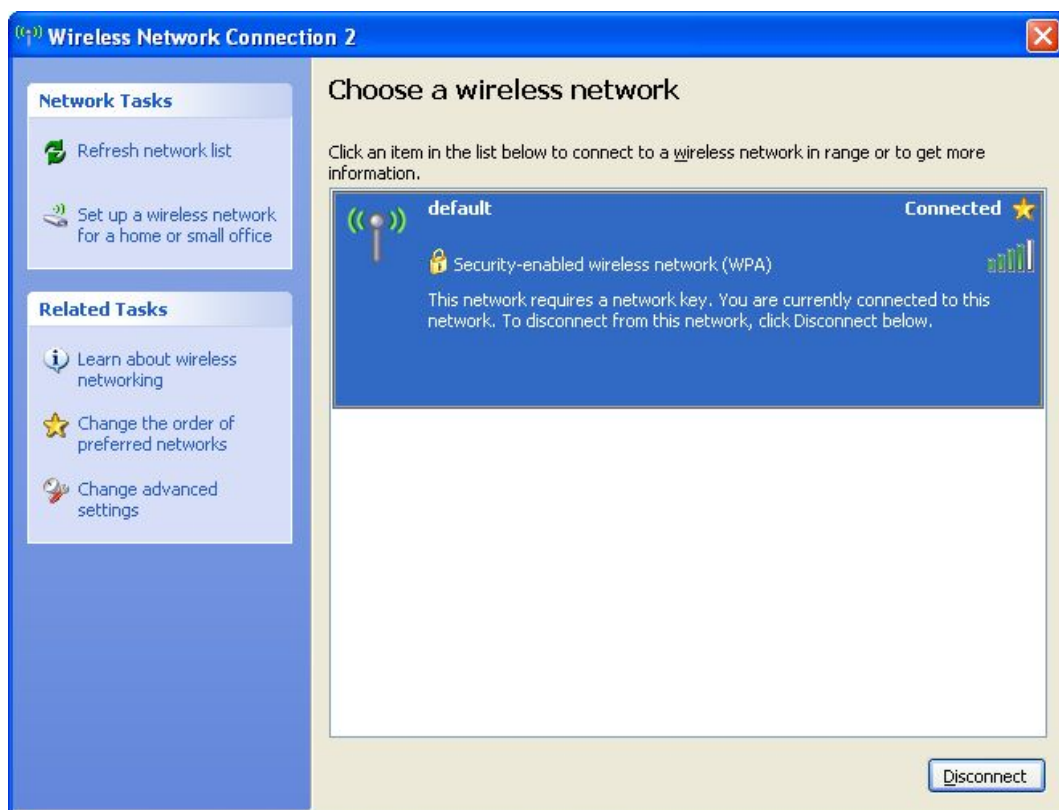
7. If the access point is protected by encryption, you have to input its security key or

passphrase here. It must match the encryption setting on the access point.

If the access point you selected does not use encryption, you'll not be prompted for security key or passphrase.



8. If you can see 'Connected' message, the connection between your computer and wireless access point is successfully established.



# 4

## Troubleshooting

This section is intended to help you solve the most common problems on the WN-200USB.

**Question:** I can't find any wireless access point / wireless device in 'Site Survey' function.

**Answer:**

- Click "**Rescan**" for few more times and see if you can find any AP or wireless device.
- Please move closer to any known AP.
- "**Ad hoc**" function must be enabled for the wireless device you want to establish a direct wireless link.
- Please adjust the position of WN-200USB (you may have to move your computer if you're using a notebook) and click "**Rescan**" button for few more times. If you can find the AP or wireless device you want to connect by doing this, try to move closer to the place where the AP or wireless device is located.

=====

**Question:** Nothing happens when I click "Launch Config Utility"

**Answer:**

- Please make sure that WN-200USB is inserted into your computer's USB port properly. If the AirLive configuration utility's icon is black, WN-200USB is not detected by your computer.
- Reboot the computer and try again.
- Remove the WN-200USB and insert it into another USB port.
- Uninstall the driver and re-install again.
- Contact your local distributor for help.

=====

**Question:** I can not establish connection with a certain wireless access point

**Answer:**

- Click “**Connect**” for few more times.
- If the SSID of AP which you want to connect is hidden (nothing displayed in “SSID” field in “Site Survey” function), you have to input correct SSID of the AP which you want to connect. Please contact the owner of AP to ask for correct SSID.
- You have to input correct security key to connect an AP with encryption. Please contact the owner of AP to ask for correct security key.
- The AP which you want to connect only allows network cards with specific MAC address to establish connection. Please go to “**About**” tab and write the value of “**Phy\_Address**” down, then present this value to the owner of AP, so he/she can add the MAC address of your network card to his/her AP’s list.

=====

**Question:** The network is slow/having problem when transferring large files

**Answer:**

- Move closer to the place where access point is located.
- Disable “**Tx Burst**” in “**Advanced**” tab.
- Enable “**WMM**” in “**WMM**” tab if you need to use multimedia / telephony related applications.
- Disable “**WMM – Power Save Enable**” in “**WMM**” tab.
- Please change the wireless channel on your AP or wireless router. Most of the wireless problems are caused by channel interference.

# 5

## Specifications

This section provides the specifications of WN-200USB, and the following table lists these specifications.

<b>Chipset</b>	<ul style="list-style-type: none"> <li>● Ralink RT3070(MAC/BB/RF)</li> </ul>
<b>Standard</b>	<ul style="list-style-type: none"> <li>● IEEE802.11b</li> <li>● IEEE802.11g</li> <li>● IEEE802.11n</li> </ul>
<b>Bus Type</b>	<ul style="list-style-type: none"> <li>● USB 2.0</li> </ul>
<b>Data Rate</b>	<ul style="list-style-type: none"> <li>● 802.11n <ul style="list-style-type: none"> <li>■ 20 MHz BW(LGI): 65, 58.5, 52, 39, 26, 19.5, 13, 6.5</li> <li>■ 40 MHz BW(LGI): 135, 121.5, 108, 81, 54, 40.5, 27, 13.5</li> <li>■ 20 MHz BW(SGI): 72.2, 65, 57.8, 43.3, 28.9, 21.7, 14.4, 7.2</li> <li>■ 40 MHz BW(SGI): 150, 135, 120, 90, 60, 45, 30, 15</li> </ul> </li> <li>● 802.11g: 54, 48, 36, 24, 18, 12, 9 and 6 Mbps</li> <li>● 802.11b: 11, 5.5, 2 and 1 Mbps</li> </ul>
<b>Operating Channels</b>	<ul style="list-style-type: none"> <li>● 11 for North America, 13 for Europe and Japan</li> </ul>
<b>Operating Frequency</b>	<ul style="list-style-type: none"> <li>● 2.4 ~ 2.4835 GHz</li> </ul>
<b>Modulation Technique</b>	<ul style="list-style-type: none"> <li>● 802.11n: BPSK, QPSK, 16-QAM, 64-QAM</li> <li>● 802.11g: OFDM</li> <li>● 802.11b: CCK,QPSK,BPSK</li> </ul>
<b>Media Access Protocol</b>	<ul style="list-style-type: none"> <li>● CSMA/CA</li> </ul>
<b>Operating Voltage</b>	<ul style="list-style-type: none"> <li>● 5V +/- 5%</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>● WPA/WPA2; 128-bit TKIP/AES encryption, 40/64-, 128-bit WEP shared-key encryption</li> <li>● 802.1x, and EAP-TLS, and PEAP authentication</li> </ul>

<b>OS Requirements</b>	● Windows Vista/XP/2000
<b>Produce Weight (g)</b>	●
<b>Dimensions</b>	● 440 x 161 x 44 mm



# 6

## Network Glossary

The network glossary contains explanation or information about common terms used in wireless networking products. Some of information in this glossary might be outdated, please use with caution.

### **100Base-FX**

The IEEE standard defines how to transmit Fast Ethernet 100Mbps data using multi-mode or single fiber optic cable

### **100Base-TX**

Also known as 802.3u. The IEEE standard defines how to transmit Fast Ethernet 100Mbps using Cat.5 UTP/STP cable. The 100Base-TX standard is backward compatible with the 10Mbps 10-BaseT standard.

### **1000Base-SX**

Also known as 802.3z. The IEEE standard defines how to transmit gigabit Ethernet data using multi-mode fiber optic cables. This standard allows transmission distance of 550 meter, which is more than 5 times longer than the 100-meter limitation of 1000Base-T. The 1000Base-SX cannot run in 100Mbps mode.

### **1000Base-LX**

The IEEE standard defines how to transmit gigabit Ethernet data using single mode fiber optic cables. This standard allows transmission distance of 5km or more using single mode fiber. The 1000Base-LX cannot run in 100Mbps mode.

### **1000Base-T**

Also known 802.3ab standard. The IEEE standard defines how to transmit Gigabit data through the use of Cat.5 UTP/STP cable. The 1000Base-T can run in 10/100/1000Mbps

speed, and is backward compatible with 10/100Base-TX standard.

### **802.11a**

An IEEE specification for wireless networking that operates in the 5 GHz frequency range (5.15 GHz to 5.850 GHz) with a maximum of 54 Mbps data transfer rate. The 5 GHz frequency band is not as crowded as the 2.4 GHz band. In addition, the 802.11a have 12 non-overlapping channels, comparing to 802.11b/g's 3 non-overlapping channels. This means the possibility to build larger non-interfering networks. However, the 802.11a deliver shorter distance at the same output power when comparing to 802.11g.

### **802.3ad**

802.3ad is an IEEE standard for bonding or aggregating multiple Ethernet ports into one virtual port (also known as trunking) to increase the bandwidth.

### **802.3af**

This is the PoE (Power over Ethernet) standard by IEEE committee. 803.af uses 48V POE standard that can deliver up to 100 meter distance over Ethernet cable.

### **802.11b**

International standard for wireless networking that operates in the 2.4 GHz frequency band (2.4 GHz to 2.4835 GHz) and provides a throughput up to 11 Mbps.

### **802.1d STP**

Spanning Tree Protocol. It is an algorithm to prevent network from loop topology. Spanning tree allows a network design to include spare (redundant) links to provide automatic backup paths if an active link fails, without the danger of bridge loops, or the need for manual enabling/disabling of these backup links. Bridge loop must be avoided because of flooding issue in the network.

### **802.11d**

Also known as “Global Roaming”. 802.11d is a standard for use in countries where systems using other standards in the 802.11 family are not allowed to operate.

### **802.11e**

The IEEE QoS standard for prioritizing traffic of the VoIP and multimedia applications. The WMM is based on a subset of the 802.11e.

### **802.11g**

A standard provides a throughput up to 54 Mbps using OFDM technology. It also operates in the 2.4 GHz frequency band as 802.11b. 802.11g devices are backward compatible with 802.11b devices.

### **802.11h**

This IEEE standard define the TPC (transmission power control) and DFS(dynamic frequency selection) required to operate WiFi devices in 5GHz for EU.

### **802.11i**

The IEEE standard for wireless security. 802.11i standard includes TKIP, CCMP, and AES encryption to improve wireless security. It is also know as WPA2.

### **802.1Q Tag VLAN**

In 802.1Q VLAN, the VLAN information is written into the Ethernet packet itself. Each packet carries a VLAN ID(called Tag) as it traveled across the network. Therefore, the VLAN configuration can be configured across multiple switches. In 802.1Q spec, possible 4096 VLAN ID can be created. Although for some devices, they can only view in frames of 256 ID at a time.

### **802.1x**

802.1x is a security standard for wired and wireless LANs. In the 802.1x parlance, there are usually supplicants (client), authenticator (switch or AP), and authentication server (radius server) in the network. When a supplicant requests a service, the authenticator will pass the request and wait for the authentication server to grant access and register accounting. The 802.1x is the most widely used method of authentication by WISP.

### **Adhoc**

A Peer-to-Peer wireless network. An Adhoc wireless network does not use a wireless AP or router as the central hub of the network. Instead, wireless clients are connected directly to each other. The disadvantage of an Adhoc network is the lack of a wired interface to Internet connections. It is not recommended for a network more than 2 nodes.

### **Access Point (AP)**

The central hub of a wireless LAN network. Access Points have one or more Ethernet ports that can connect devices (such as Internet connection) for sharing. Multi-function Access Points can also function as an Ethernet client, wireless bridge, or repeat signals from other APs. Access Points typically have more wireless functions compared to wireless routers.

**Cable and Connector Loss:** During wireless design and deployment, it is important to factor in the cable and connector loss. Cable and connector loss will reduce the output power and receiver sensitivity of the radio at the connector end. The longer the cable length is, the more the cable loss. Cable loss should be subtracted from the total output power during distance calculation. For example, if the cable and connector loss is 3dBm and the output power is 20dBm; the output power at the cable end is only 17dBm.

### **Client**

Client means a network device or utility that receives service from a host or server. A client device means end user device such as wireless cards or wireless CPE.

### **DHCP**

Dynamic Hosting Configuration Protocol. A protocol that enables a server to dynamically assign IP addresses. When DHCP is used, whenever a computer logs onto the network, it automatically gets an IP address assigned by DHCP server. A DHCP server can either be a designed PC on the network or another network device, such as a router.

## **Encryption**

Encoding data to prevent it from being read by unauthorized people. The common wireless encryption schemes are WEP, WPA, and WPA2.

## **ESSID (SSID)**

The identification name of an 802.11 wireless network. Since wireless network has no physical boundary liked wired Ethernet network, wireless LAN needs an identifier to distinguish one network from the other. Wireless clients must know the SSID in order to associate with a WLAN network. Hide SSID feature disable SSID broadcast, so users must know the correct SSID in order to join a wireless network.

## **Firmware**

The program that runs inside embedded device such as AP or Switch. Many network devices are firmware upgradeable through web interface or utility program.

## **FTP**

File Transfer Protocol. A standard protocol for sending files between computer over a TCP/IP network and the internet.

## **Fragment Threshold**

Frame Size larger than this will be divided into smaller fragment. If there are interferences in your area, lower this value can improve the performance. If there are not, keep this parameter at higher value. The default size is 2346. You can try 1500, 1000, or 500 when there are interference around your network.

## **Full Duplex**

The ability of a networking device to receive and transmit data simultaneously. In wireless environment, this is usually done with 2 or more radios doing load balancing.

## **Gateway**

In the global Internet network, the gateways are core routers that connect networks in different IP subnet together. In a LAN environment with an IP sharing router, the gateway is the router. In an office environment, gateway typically is a multi-function device that integrates NAT, firewall, bandwidth management, and other security functions.

## **GI**

Guard Interval. It's a measure to protect wireless devices from cross- interference. If there are two wireless devices using the same or near channel, and they are close enough, radio interference will occur and reduce the radio resource usability. In an OFDM system, the length of the guard interval needs to be changed according to the environment to make efficient use of the communication channels. In General, you will see SGI (Short Guard Interval) or LGI (Long Interval Guard).

## **Hotspot**

A place where you can access Wi-Fi service. The term hotspot has two meanings in wireless deployment. One is the wireless infrastructure deployment, the other is the Internet access billing system. In a hotspot system, a service provider typically need an authentication and account system for billing purposes, and a wireless AP network to provide access for customers.

## **IGMP Snooping**

Internet Group Management Protocol. It is a Layer 3 protocol to report IP multicast memberships to neighboring multicast switches and routers. IGMP Snooping is a feature that allows an Ethernet Switch to "listen in" on the IGMP conversation between hosts and routers. When IGMP snooping is enabled in a switch, it prevent hosts on a local network from receiving traffic for a multicast group they have not explicitly joined. It provides switches with a mechanism to prune multicast traffic from links that do not contain a multicast listener (IGMP client).

### **Infrastructure Mode**

A wireless network that is built around one or more access points to provide wireless clients access to wired LAN / Internet service. The opposite of Infrastructure mode is Adhoc mode.

### **IP Address**

IP (Internet Protocol) is a Layer 3 network protocol that is the basis of all Internet communication. An IP address is 32-bit number that identifies each sender or receiver of information that is sent across the Internet. An IP address has two parts: an identifier of a particular network on the Internet and an identifier of the particular device (which can be a server or a workstation) within that network. The new IPv6 specification supports 128-bit IP address format.

### **IPsec**

IP Security. A set of protocols developed by the IETF to support secure exchange of packets at the IP layer. IPsec has been deployed widely to implement Virtual Private Networks (VPNs). IPsec supports two encryption modes: Transport and Tunnel. Transport mode encrypts only the data of each packet, but leaves the header untouched. The more secure Tunnel mode encrypts both the header and the payload. On the receiving side, an IPSec-compliant device decrypts each packet.

### **LACP (802.3ad) Trunking**

Link Aggregation Control Protocol. It is protocol defines how to combine the several Ethernet ports into one high-bandwidth port to increase the transmission speed. It is also known as port trunking. Both devices must set the trunking feature to work.

### **MAC**

Media Access Control. MAC address provides Layer-2 identification for network devices. Each Ethernet device has its own unique address. The first 6 digits are unique for each device manufacturers. When a network device has MAC access control feature, only the devices with the approved MAC address can connect with the network.

**Mbps**

Megabits Per Second. One million bits per second; a unit of measurement for data transmission.

**MESH**

Mesh is an outdoor wireless technology that uses Spanning Tree Protocol (STP) and Wireless Distribution system to achieve self-forming, self-healing, and self-configuring outdoor network. MESH network are able to take the shortest path to a destination that does not have to be in the line of site.

**MIMO**

Multi In Multi Out. A Smart Antenna technology designed to increase the coverage and performance of a WLAN network. In a MIMO device, 2 or more antennas are used to increase the receiver sensitivity and to focus available power at intended Rx.

**NAT**

Network Address Translation. A network algorithm used by Routers to enables several PCs to share single IP address provided by the ISP. The IP that a router gets from the ISP side is called Real IP, the IP assigned to PC under the NAT environment is called Private IP.

**Node**

A network connection end point, typically a computer.

**Packet**

A unit of data sent over a network.

**Passphrase**



Used much like a password, a passphrase simplifies the WEP encryption process by automatically generating the WEP encryption keys for the company products.

## **Port**

This word has 2 different meaning for networking.

- The hardware connection point on a computer or networking device used for plugging in a cable or an adapter.
- The virtual connection point through which a computer uses a specific application on a server.

## **PPPoE**

Point-to- Point Protocol over Ethernet. PPPoE relies on two widely accepted standards: PPP and Ethernet. PPPoE is a specification for connecting the users on an Ethernet to the Internet through a common broadband medium, such as a single DSL line, wireless device or cable modem.

## **PPTP**

Point-to-Point Tunneling Protocol: A VPN protocol developed by PPTP Forum. With PPTP, users can dial in to their corporate network via the Internet. If users require data encryption when using the Windows PPTP client, the remote VPN server must support MPPE (Microsoft Point-To-Point Encryption Protocol) encryption. PPTP is also used by some ISP for user authentication, particularly when pairing with legacy Alcatel / Thomson ADSL modem.

## **Preamble Type**

Preamble are sent with each wireless packet transmit for transmission status. Use the long preamble type for better compatibility. Use the short preamble type for better performance.

## **Rate Control**

It is an Ethernet switch's function to control the upstream and downstream speed of an individual port. Rate control management use "Flow Control" to limit the speed of a port. Therefore, the Ethernet adapter must also have the flow control enabled. One way to force the adapter's flow control on is to set a port to half-duplex mode.

## **RADIUS**

Remote Authentication Dial-In User Service. An authentication and accounting system used by many Internet Service Providers (ISPs). When you dial in to the ISP, you must enter your username and password. This information is passed to a RADIUS server, which checks that the information is correct, and then authorizes access to the ISP system. Radius typically uses port 1812 and port 1813 for authentication and accounting port. Though not an official standard, the RADIUS specification is maintained by a working group of the IETF.

## **Receiver Sensitivity**

Receiver sensitivity means how sensitive is the radio for receiving signal. In general; the slower the transmission speed, the more sensitive the radio is. The unit for Receiver Sensitivity is in dB; the lower the absolute value is, the higher the signal strength. For example, -50dB is higher than -80dB.

## **RJ-45**

Standard connectors for Twisted Pair copper cable used in Ethernet networks. Although they look similar to standard RJ-11 telephone connectors, RJ-45 connectors can have up to eight wires, whereas telephone connectors have only four.

## **Router**

An IP sharing router is a device that allows multiple PCs to share one single broadband connection using NAT technology. A wireless router is a device that combines the functions of wireless Access Point and the IP sharing router.

**RSSI**

Receiver Sensitivity Index. RSSI is a value to show the Receiver Sensitivity of the remote wireless device. In general, remote APs with stronger signal will display higher RSSI values. For RSSI value, the smaller the absolute value is, the stronger the signal. For example, “-50db” has stronger signal than “-80dB”. For outdoor connection, signal stronger than -60dB is considered as a good connection.

**RTS**

Request To Send. A packet sent when a computer has data to transmit. The computer will wait for a CTS (Clear To Send) message before sending data.

**RTS Threshold**

RTS (Request to Send). The RTS/CTS(clear to send) packet will be send before a frame if the packet frame is larger than this value. Lower this value can improve the performance if there are many clients in your network. You can try 1500, 1000 or 500 when there are many clients in your AP's network.

**SNMP**

Simple Network Management Protocol. A set of protocols for managing complex networks. The SNMP network contains three key elements: managed devices, agents, and network-management system (NMS). Managed devices are network devices that contain SNMP agents. SNMP agents are programs that reside SNMP capable device's firmware to provide SNMP configuration service. The NMS typically is PC-based software that can monitor and control managed devices remotely.

**SSH**

Developed by SSH Communications Security Ltd., Secure Shell is a program to log into another computer over a network, to execute commands in a remote machine, and to move files from one machine to another. It provides strong authentication and secure communications over insecure channels. It is a replacement for rlogin, rsh, rcp, and rdist.

## **SSL**

Secure Sockets Layer. It is a popular encryption scheme used by many online retail and banking sites to protect the financial integrity of transactions. When an SSL session begins, the server sends its public key to the browser. The browser then sends a randomly generated secret key back to the server in order to have a secret key exchange for that session. SSL VPN is also known as Web VPN. The HTTPS and SSH management interface use SSL for data encryption.

## **Subnet Mask**

An address code mask that determines the size of the network. An IP subnet are determined by performing a BIT-wise AND operation between the IP address and the subnet mask. By changing the subnet mask, you can change the scope and size of a network.

## **Subnetwork or Subnet**

Found in larger networks, these smaller networks are used to simplify addressing between numerous computers. Subnets connect to the central network through a router, hub or gateway. Each individual wireless LAN will probably use the same subnet for all the local computers it talks to.

## **Super A**

Super A is an Atheros proprietary turbo mode to increase speed over standard 802.11a mode. It adds Bursting and Compression to increase the speed. If you live in countries that prohibit the channel binding technology (i.e. Europe), you should choose "Super-A without Turbo) if you need more speed than 11a mode

## **TCP**

A layer-4 protocol used along with the IP to send data between computers over the Internet. While IP takes care of handling the actual delivery of the data, TCP takes care of keeping track of the packets that a message is divided into for efficient routing through the Internet.

**Turbo A**

Turbo A is an Atheros proprietary turbo mode to increase speed over standard 802.11a mode. It uses channel binding technology to increase speed. There are 2 types of Turbo A modes: Dynamic Turbo and Static Turbo. In Dynamic Turbo, the channel binding will be used only if necessary. In Static Turbo, the channel binding is always on. This protocol may be combined with Super-A model to increase the performance even more. The used of channel binding might be prohibited in EU countries.

**TX Output Power**

Transmit Output Power. The TX output power means the transmission output power of the radio. Normally, the TX output power level limit for 2.4GHz 11g/b is 20dBm at the antenna end. The output power limit for 5GHz 802.11a is 30dBm at the antenna end..

**UDP**

User Datagram Protocol. A layer-4 network protocol for transmitting data that does not require acknowledgement from the recipient of the data.

**Upgrade**

To replace existing software or firmware with a newer version.

**Upload**

To send a file to the Internet or network device.

**URL**

Uniform Resource Locator. The address of a file located on the Internet.

**VPN**

Virtual Private Network. A type of technology designed to increase the security of information transferred over the Internet. VPN creates a private encrypted tunnel from the end user's computer, through the local wireless network, through the Internet, all the way to the corporate network.

**Walled Garden**

On the Internet, a walled garden refers to a browsing environment that controls the information and Web sites the user is able to access. This is a popular method used by ISPs in order to keep the user navigating only specific areas of the Web

**WAN**

Wide Area Network. A communication system of connecting PCs and other computing devices across a large local, regional, national or international geographic area. A WAN port on the network device means the port (or wireless connection) that is connected to the Internet side of the network topology.

**WEP**

Wired Equivalent Privacy. A wireless encryption protocol. WEP is available in 40-bit (64-bit), 108-bit (128-bit) or 152-bit (Atheros proprietary) encryption modes.

**Wi-Fi**

Wireless Fidelity. An interoperability certification for wireless local area network (LAN) products based on the IEEE 802.11 standards. The governing body for Wi-Fi is called Wi-Fi Alliance (also known as WECA).

**WiMAX**

Worldwide Interoperability for Microwave Access. A Wireless Metropolitan Network technology that complies with IEEE 802.16 and ETSI Hiperman standards. The original 802.16 standard call for operating frequency of 10 to 66Ghz spectrum. The 802.16a amendment extends the original standard into spectrum between 2 and 11 Ghz. 802.16d increase data rates to between 40 and 70 Mbps/s and add support for MIMO antennas, QoS, and multiple polling technologies. 802.16e adds mobility features, narrower bandwidth (a max of 5 mhz), slower speed and smaller antennas. Mobility is allowed up to 40 mph.

### **WDS**

Wireless Distribution System. WDS defines how multiple wireless Access Point or Wireless Router can connect together to form one single wireless network without using wired uplinks. WDS associate each other by MAC address, each device

### **WLAN**

Wireless Local Area Network. A type of local-area network that uses high-frequency radio waves rather than wires to communicate between nodes. The most popular standard for WLAN is the 802.11 standards.

### **WMM**

Wi-Fi Multimedia (WMM) is a standard to prioritize traffic for multimedia applications. The WMM prioritize traffic\ on Voice-over-IP (VoIP), audio, video, and streaming media as well as traditional IP data over the AP.

### **WMS**

Wireless Management System. An utility program to manage multiple wireless AP/Bridges.

**WPA**

Wi-Fi Protected Access. It is an encryption standard proposed by WiFi for advance protection by utilizing a password key (TKIP) or certificate. It is more secure than WEP encryption. The WPA-PSK utilizes pre-share key for encryption/authentication.

**WPA2**

Wi-Fi Protected Access 2. WPA2 is also known as 802.11i. It improves on the WPA security with CCMP and AES encryption. The WPA2 is backward compatible with WPA. WPA2-PSK utilizes pre-share key for encryption/authentication.